

## Montgomery County

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# Landscape Manual

MONTGOMERY COUNTY

## Landscape Manual

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# Table of Contents

## Introduction

Goals and Objectives .....	1
Purpose.....	2

## Plan Preparation

Qualified Professional.....	4
Submission Requirements.....	4
Alternative Compliance.....	
Major and Minor Amendments	

## Design Guidelines

Streetscapes.....	
Public.....	
Street Trees.....	
Paving Materials.....	
Streetscape Features.....	
Tree Pits.....	
Private.....	
Street Trees.....	
Driveways and Roadways.....	
Shade Trees.....	
ADA Compliance	
CPTED	

Open Space.....	
Relevant Zoning Ordinance Requirements.....	
Urban Open Space.....	
Mixed Use Open Space.....	
Public Use Space.....	

### **Recreation**

Green Area.....	
Shade Tree Requirements.....	
Fence Requirements.....	
Ornamental Planting Requirements.....	
Screening/Buffering Requirements.....	

### **Parking**

Design Regulations.....	
-------------------------	--

Interior Green Space.....	.....
Structured Parking.....	.....

## Table of Contents (continued)

<b>Screens &amp; Buffers.....</b>	.....
Berms.....	.....
Fences and Walls.....	.....
Screens.....	.....
Parking.....	.....
Loading Docks/Storage areas/Dumpsters.....	.....
Utility/Mechanical Equipment.....	.....
Buffers.....	.....
Storm Water Management Facilities.....	.....

<b>Site Design.....</b>	.....
Pedestrian Accessibility.....	.....
Vehicular Accessibility.....	.....
Public Utility Easements.....	.....
Right-of-Ways (ROW).....	.....
Stormwater Management Facilities.....	.....
Retaining Walls.....	.....
Lighting.....	.....

<b>Environmental Protection.....</b>	.....
Environmental Guidelines.....	.....
Forest Conservation.....	.....
Low Impact Development.....	.....
Green Roof Technology.....	.....
Bioretention.....	.....

## Planting Performance Standards.....

Reference Standard for Nursery Stock.....	.....
Reference Standard for Plant Nomenclature.....	.....
Material Considerations.....	.....
Americans with Disabilities Act (ADA) Standards of Design.....	.....

## Enforcement

Maintenance Responsibilities.....	.....
Site Plan Enforcement.....	.....

## References.....

Links.....	.....
------------	-------

# Table of Contents (continued)

## Acknowledgements

Process... ..

Participants... ..

Glossary... ..

# Introduction

The purpose of this manual is to provide guidance to professionals for the design of landscape plans and to achieve consistency and quality of design, while allowing room for flexibility and creativity in the development process. This manual is being created to organize the rules and regulations from the Zoning Ordinance and landscape specifications applied to Special Exceptions or other regulatory processes into one document. We hope that by following the requirements and recommendations in this landscape manual the development community will notice a substantial reduction in the time required for plan review by the Commission staff, and that the landscape architects will provide more creative and concise plans with every development application.

This manual has been developed by the Montgomery County Department of Park and Planning, a division of the Maryland-National Capital Park and Planning Commission (hereinafter known as the "M-NCPPC"), to establish landscape design requirements and recommendations in a comprehensive and useable format for landscape plans in Montgomery County. This comprehensive manual shall be used by designers and reviewers to implement creative and effective solutions for all methods of development and to expedite the review process.

This manual provides guidance for the preparation of a landscape plan. Landscape plans are required for all site plan submissions, and as a condition of approval for most special exceptions, preliminary plans, and zoning cases. Streetscape guidelines have been adopted for each central business district (CBD) within Montgomery County providing additional requirements to enhance areas of public use and right-of-way such as special paving, street furniture, and specific street trees. This manual complements the streetscape guidelines by referencing the approved streetscape standards in the CBDs and applying those standards to the urban areas being developed in Montgomery County. The manual also recognizes the need to apply guidelines to the urban areas that are encroaching upon the suburban environment by addressing pedestrian and vehicular circulation, as well as the aesthetic and functional significance of an urban streetscape.

This manual will apply to all development within the jurisdictional boundaries of the Commission in Montgomery County, Maryland, excluding the cities and towns of Beallsville, Brookeville, Laytonsville, Poolesville, Rockville, and Gaithersburg. The Montgomery County zoning ordinance will always take precedence over the guidelines in this manual in case of any overlapping discrepancies. Any suggestions or recommendations in this manual that conflict with the zoning ordinance should follow with a zoning text amendment.

Also found within this manual are additional recommendations for progressive or alternative methods of landscape development that should be considered for best

environmental management practices such as bioretention and green technology. These techniques are regulated by Montgomery County Executive Agencies and not M-NCPPC, although awareness of

new techniques for environmental stewardship are encouraged by our agency.

## **Goals and Objectives**

Montgomery County recognizes the significance of creative design in the developed landscape, as well as the preservation of our existing natural resources. The primary goals are to provide a plan that promotes the health, safety and welfare for Montgomery County and to promote a harmonious relationship between the natural and built environment, which produces a superior quality of life. To achieve the goal, the primary design objectives are as follows:

- Promote innovative, creative and sustainable design solutions that reduce the impact of development on the natural environment.
- Develop attractive, creative and functional outdoor spaces throughout Montgomery County.
- Develop outdoor spaces that provide an identity to residential communities and commercial areas through landscape, hardscape and design elements.
- Encourage preservation of natural habitats through protection of existing forest cover and significant environmental areas.

- Promote the preservation of significant natural features in the built environment through a creative design process.



Figure 1: Site Location

The map shows a street grid with 'Northgate Mall' running horizontally and 'Northgate Station' running vertically. A shaded area labeled 'Public Use' is located to the left of Northgate Mall. A circle labeled 'Northgate Station' is located at the intersection of Northgate Mall and the Northgate Station street. A rectangle labeled 'Northgate Mall' is located to the right of the Northgate Station street. The site is located near the intersection of Northgate Mall and the Northgate Station street.

A qualified professional must prepare and seal all submitted landscape plans, demonstrating satisfactory compliance with the requirements and recommendations of this Landscape Manual. Only licensed Landscape Architects registered in the state of Maryland, or other licensed and registered professionals authorized by the state of Maryland to prepare and seal landscape plans, will be considered as qualified professionals.

A complete landscape plan shall be submitted with the Site Plan and special exception applications, or conform to a condition of approval or preliminary plan, and shall consist of the following elements:

- Vicinity map which clearly locates the site and context
- Existing and proposed topography in two-foot contours
- Land use zone designation of the site and all adjacent parcels
- Legend of existing and proposed features
- Location of all existing structures and uses on adjacent parcels within 200 feet of site
- Locate specimen trees and their Critical Root Zones, as defined by the Trees

4

- Methods and detail drawings for protecting existing vegetation during construction as specified on the approved Final Forest Conservation Plan
- Vegetation to be removed and limits of disturbance
- Planting and installation detail
- Planting bed preparations and specifications
- Location and description of other landscape related improvements, including but not limited to fences, retaining walls, berms, lights, special paving, artwork, curb stops, street furniture, modified tree pits, recreation areas, and pathways.
- Internal Planting area calculations and plans for parking lots if provided
- Location of loading and storage areas if provided
- Locations and labels for all proposed plants with a planting schedule including:
  - Botanical name
  - Common name
  - Quantity
  - Spacing
  - Size at time of planting
  - Root type
  - Special remarks
- Summary of maintenance procedures
- North arrow and scale (Written and Graphic)
- Property lines
- Name, location, right-of-way (ROW) and paving widths of all abutting streets
- Existing and proposed public utility easements (PUE)
- Natural features such as ponds, lakes, streams, and non-tidal wetlands
- 100-year floodplain, stream and wetland buffers, steep slopes and any other significant environmental conditions
- Existing and proposed stormwater management ponds
- Required setbacks from all lot lines, roadways, driveways, and intersections
- Location, height, dimensions, and use of all existing and proposed buildings and other structures, including but not limited to parking lots, sidewalks, and plazas

- Location of designated historic resources on and off the site
- Existing and proposed utilities

## **Alternative Compliance**

An alternative method of compliance to these Landscape Guidelines may be submitted for approval by the Department of Park and Planning if site conditions or design criteria prove extensively limiting to the success of the project and the alternative method accomplishes the same intent as the standard method.

Site conditions that may constitute alternative methods of compliance include but are not limited to: irregularly-shaped tracts of property; properties enclosed by major public roadways on more than one frontage; existing conditions and elements of a site to remain that may impact the proposed development or any other constraints proposed to staff.

Design criteria should be included in the overall design to account for the modifications to the standard requirements. Additional or alternative design techniques should be implemented as part of the landscape plan for the specific area that does not meet the requirements of the manual. Examples include but may not be limited to:

### Screening and Buffering requirements

Masonry walls, increased plant material sizes; earth berms, alternative grading techniques, an alternative parking layout or anything else to achieve compliance with the requirements.

### Open Space/Public Use Space

Artwork may be proposed within the open space or public use areas to create additional amenity areas

### Parking

Reduction in the setbacks to public roads and adjacent properties as recommended by the landscape manual [Landscape Manual does **not** supercede the Montgomery County Zoning Ordinance]

Planting requirements in the parking islands [structural conflicts with above grade facilities and planting]

If the applicant intends to request a modification to the requirements of this manual, a justification must be submitted to staff for review along with a proposal indicating the modifications and improvements being proposed. Staff can approve the modifications as long as the modifications show that the intent of the standard is still being satisfied, the existing site conditions render compliance impossible, environmental quality is substantially enhanced and that mitigation does not adversely impact vehicular and pedestrian circulation. The modification to the requirements must be noted on the landscape plan.

Modifications to the approved plans need to be documented through a Minor Amendment or Major Amendment process. The intent of the two processes is to document the changes for future residents and users of a particular site, as well as ensure the design intent of the plan is consistent. A description of the amendment process is as follows:

#### Minor Amendments

The Minor Amendment process is reserved for modifications to the Site and Landscape Plan that do not involve in-depth review or significant design changes, but are relevant to the approved plans. The changes need to go through the submittal and review process like any other submittal but typically do not involve a Development Review Committee Meeting or Planning Board review and approval. The process is administrative and requires the appropriate fee for minor amendments list in the “Fee Schedule and Worksheet” for “Site Plan Application”. The current fee for minor amendments range from \$300 to \$1,500 but may change as the fees increase for Site Plan Applications.

#### Major Amendments

Major Amendments to the Site and Landscape Plans are changes that may impact the overall design intent of the site, alter circulation patterns, change materials that are integral to the approved design scheme or any other revision that impacts the conditioned approval of the Site Plan and Landscape Plan. The Major Amendment Process is reviewed as a revised application that would receive an assigned site plan amendment number through the submittal process. This process would require a new application, fee and full review by staff.

The plans would be routed through the Development Review Committee and most likely go to the Planning Board for review and approval. Noticing of adjacent and confronting properties would be required. The Major Amendment process and fee is listed in the "Fee Schedule and Worksheet" for "Site Plan Application". The current fee for major amendments is the same as the fee for new Site Plan Applications.

# Landscape Design Guidelines

**Streetscapes** are typically comprised of roadways, sidewalks, utilities, trees, lighting, and any other additional landscape amenities, such as benches, fountains, and artwork, that are deemed necessary to fulfill all functional and public use space requirements of the community. The public and private sectors differ in some of their requirements for streetscape design due to road width and classification of the road and the function of the road.

Trees in both the urban and suburban environments must be able to satisfy certain conditions to attain their most optimum use along streets and roadways. Shade trees need to be able to adapt to their proposed locations while serving a primary function for shade, screening and circulation. Street trees in the suburban environment are typically associated with shade and linear direction for pedestrian and vehicular circulation, whereas, the overall function of the streetscape in the urban environment is to engage pedestrians with the other amenities of the streetscape.

The trees must be able to offer a sufficient amount of shade for the sidewalk and roadway. Limbs of the trees must hang at an appropriate height (minimum 7 feet) above the ground, so not to interfere with vehicular or pedestrian circulation. The soil must be of an appropriate depth to ensure the health and longevity of the tree. Street trees, in their mature form, shall not interfere with power lines, underground utilities, signs, or other features of the landscape that could inhibit the growth of the tree or cause deleterious maintenance issues. In cases where specific site features might inhibit the growth and function of the tree, alternative locations and appropriate selection of plant material is recommended.

## **Public**

The spacing of **street trees** in public rights-of-way(ROW) is coordinated by M-NCPPC and The Montgomery County Department of Works and Transportation(DPWT), while those on private roads are regulated by the Commission. Street trees in the CBD are specified in the respective Sector Plan and Streetscape Manual for species, size, location, and spacing. DPWT has standard design criteria for species, spacing, and locations that correspond to the proposed road network and specifies the following stipulations for street trees on public roads.

### **Suburban**

- Large, deciduous shade trees should be spaced no farther apart than 40 feet on center, depending on the internal road network and location of parking and other site features.
- Small to medium, deciduous ornamental trees should be spaced no farther apart than 30 feet on center

### **Urban**

- Large deciduous shade trees, as specified in CBD areas for Bethesda, Wheaton, and Silver Spring, as well as the Town Center areas like Germantown and Cloverly, shall adhere to their respective streetscape guidelines.
- Spacing is typically 30 feet on center

## **Paving Materials**

Proper use of paving materials can enhance and define specific areas such as crosswalks, intersections, driveways, and public spaces, thereby promoting a more safe, aesthetic, and pedestrian-friendly community. Specific applications are best served by materials suited to them, such as those shown below:

### **Roads and Driveways:**

- Asphalt (including stamped)

### **Crosswalks:**

- Asphalt (including stamped)

- Concrete (including stamped)
- Concrete Pavers
- High visibility striping and in-pavement lights or other technologies may be desired along with the paving materials

#### **Sidewalks:**

- Concrete (including stamped)
- Concrete Pavers
- Bricks (normally with concrete underbase)

#### **Streetscape Features**

Additional amenities including benches, planters, lighting, fountains, and artwork must be considered to provide a more pleasant atmosphere for all users. Colors, textures, and styles should be carefully chosen to establish a consistent and aesthetic compliment to the proposed and adjacent structures and materials.

#### **Tree Pits**

The modification of soil in amended tree pits or panels is vital to the survivability of a shade tree in the urban environment. Tree pits should include a mix of approximately 75% native soil and 25% amended soil, as well as proper drainage techniques and filter fabric. Structural soil is recommended for consideration, particularly in irregularly designed tree pits.

### **Private**

**Street trees** in the private road network follow many of the same principles that Montgomery County has established for public roads. Most townhouse and multiple family communities, as well as some one-family detached communities are served by private roads. Typically, the paving section on private roads is narrower and does not burden the optimal planting areas with utilities or other obstructions, establishing a streetscape more conducive to tree plantings and pedestrian circulation. Opportunity for flexibility and creativity in the streetscape approval is greater on private streets and is not subject to County requirements for species, spacing, size, and location.



**Driveways and Roadways** in the private realm should abide by similar tree planting standards as roadways in the suburban public realm, but with more opportunity for creativity. Large shade trees should be planted at a minimum ratio of one per 40 feet of driveway length. Small, ornamental trees should be planted at a minimum ratio of one per every 30 feet of linear driveway length. These measures can be satisfied in the following ways:

- Linear(or semi-linear) plantings that parallel the driveway on either side in alternating sequence
- Linear(or semi-linear) plantings that parallel the drive on either side in opposing sequence
- Cluster plantings that group trees together in informal arrangements, while still satisfying the tree to driveway ratio
- Any combination of the above

### **Shade Trees**

Shade trees for specific use on private roads and in office parks must be carefully selected to maximize shade and vigor, without infringing upon circulation patterns or surrounding landscape features. Native species are recommended.

## **Open Space**

### **Relevant Zoning Ordinance Requirements**

Open space is required on many development applications in Montgomery County. The function of Open Space differs as they relate to natural and non-natural areas, base on the requirements in the zoning classifications. Natural areas, such as woodlands, grasslands, wetlands, and waterways account for open space and should be preserved wherever possible. Non-natural areas can include areas such as storm water management areas, plazas, seating areas, recreational areas that can count towards the overall open space requirements

Open space should be programmed into the site design to address the needs of a proposed community, such as active and passive recreation, open play areas, and protection of environmentally sensitive areas. Plant materials should be incorporated into the design to highlight edge treatments, accent design elements, and define areas for screening and buffering of land uses.

### **Urban Open Space**

Urban open space is regarded as public or private amenity area in project sites that incorporate many of the same functions as the public use spaces in the Central Business Districts. These open spaces can be centrally located or located in areas that provide a focal feature within the open space gathering for community activities. The activities within the planned open spaces can be credited toward the recreation requirements as long as the elements fall within the parameters of the Recreation Guidelines.

Urban Open Space can include plaza areas incorporating seating and decorative planting areas, decorative paving, specialty lighting, amenity landscaping separate from the streetscape, water features or artwork or other features to accentuate the space.

### **Mixed Use Open Space**

What do we wish to address?

### **Public Use Space**

Public use space is intended to provide public use and enjoyment for the public environment relating to activity and circulation. Streetscape requirements are typically provided for in the public right-of-way as off-site public use space while improvements on the subject site are intended to activate the public from off-street use. Public use space typically incorporates the approved standards in the Streetscape Guidelines for the Central Business Districts and Town Center areas. The space includes but is not limited to special pavers, street trees, street lights, amenity landscaping and lighting, street furniture and public art.

## Recreation

The Recreation Guidelines (adopted September 1992) were developed to determine the adequacy of private recreational facilities and amenities in a site plan. Specific recreational facilities were identified in the Recreation Guidelines with a general discussion about the need for landscaping as a functional treatment that would be incorporated into each recreational use. The Landscape Guidelines are being developed as a supplement to the Recreation Guidelines to better define the general requirements set forth for each recreational use, and in no way intend to circumvent the development criteria in the adopted Recreation Guidelines.

### Green Area

Green area shall be defined as an area of land associated with and located on the same tract of land as a major building or group of buildings, or a prescribed portion of the land area encompassed by a development plan, diagrammatic plan or site plan, to which it provides light and air, or scenic, recreational or similar amenities. Green area may include, but is not limited to, lawns, decorative plantings, sidewalks and walkways, active and passive recreational areas including children's playgrounds, public plazas, swimming pools, fountains, wooded areas, and water courses. Green area does not include parking lots or vehicular surfaces.

### Shade requirements:

~~Excluding those shade trees used for screening and buffering purposes, recreational facilities must also provide interior shade trees. A minimum of 20 shade trees per acre is encouraged for sufficient coverage.~~

### Fence requirements:

Fences should be considered in cases where safety hazards such as railroads, steep slopes, and roadways, may exist. Ornamental fences, including metal, iron and aluminum should not exceed 6' 5" in height. Spacing between pickets for ornamental fencing should be no less than 4" on center, or as specified in the current

by ASTM (Association of Safety... ) and (CPSC) Consumer Product Safety Commission. Other acceptable fencing includes split-rail, board-on-board and masonry.

### **Ornamental planting requirements:**

Ornamental plantings must be incorporated into recreational facilities for the creation of intimate, aesthetic, public spaces. Ornamental trees, shrubs, perennials, annuals, and other non-invasive vegetation that add color, scents, and texture are strongly recommended for use.

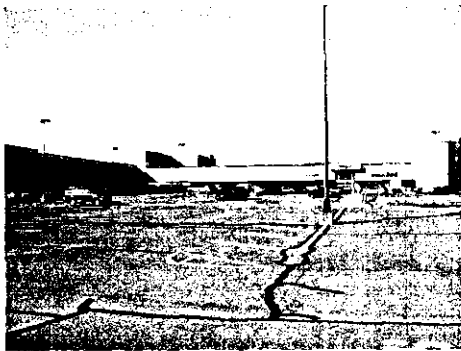
### **Screening/Buffering Requirements**

Recreational areas adjacent to various zones must abide by specific screening guidelines. The obstruction of objectionable views, noise, and lighting is necessary to maintain the healthy, harmonious environment of most recreational areas. The following guidelines summarize screening requirements for recreational facilities adjacent to various land uses:

- Adjacent to Single Family Detached:
  - 1 shade tree/60 ft.
- Adjacent to Single Family Attached
  - 1 Shade Tree/50 ft.
- Adjacent to Multi-Family:
  - 1 Shade Tree/50 ft.
  - 1 Evergreen Tree/40 ft.
- Adjacent to Commercial
  - 1 Shade Tree/40 ft.
  - 1 Evergreen Tree/20 ft.
- Adjacent to Industrial
  - 1 Shade Tree/40 ft.
  - 1 Evergreen Tree/20 ft.
- Adjacent to Road
  - 1 Shade Tree/50 ft.

- 1 Shrub/5 ft.
- Adjacent to Parking
  - 1 Shade Tree/40 ft.
  - 1 Shrub/5 ft.

## Parking



Parking lot without landscaping

### Design Regulations

The design intent for landscaping within parking facilities is to provide shade for cooling effects, to screen adjacent properties and public roads, to promote safety, and to visually enhance the quality of the site. Many acceptable layouts are possible, as long as they incorporate the required buffers and green space, and accommodate adequate vehicular and pedestrian circulation through the area.

### Interior Green Space

The internal area of a parking lot is defined by the perimeter of the curbs or edge of pavement. The Montgomery County zoning ordinance (Chapter 59-E-273) specifically requires that a minimum of 5 percent of the internal area of a surface parking facility shall be landscaped with shade trees. Where possible, existing shade trees should be protected and

saved. The following recommendations apply to the design of interior green space within parking facilities:

- Parking lots are required to be screened along public roads with a vegetated or structural buffer at least 3 feet high.
- Planting islands are required within parking lots to create shade, to improve aesthetics, and to serve as potential bioretention cells for drainage purposes.
- Islands that are parallel to the sides of parking spaces shall be a minimum of 8-½ ft. wide, face of curb to face of curb, for planting purposes.
- Planting islands at the heads of parking spaces shall be a minimum of 8 feet wide, from face of curb to face of curb.
- Deciduous shade trees with ground cover or low shrubs must be used as the primary landscape material for parking areas.
- Parking lot shade trees should be a minimum of 2.5-3" caliper.
- Landscaped islands containing a minimum of one shade tree per every 10 parking spaces shall be installed within parking lots of residential land use areas.
- Landscaped islands containing a minimum of one shade tree per every 15 parking spaces shall be installed within parking lots of non-residential land use areas.
- For every 40 linear feet around the perimeter of a parking lot, one shade tree should be placed.
- A planted strip not less than 5 feet wide is required where an off-street parking area abuts an adjacent parking area under different ownership. This strip need be a minimum of 10 feet wide if it is to include tree plantings and/or an earth berm.
- Soil depth need be a minimum of 3 feet where parking lot trees are to be planted

Sample Schedule of Internal Landscaping for Parking Lot

Interior Parking Lot Planting		
	Required % and sq. ft.	Proposed % and sq. ft.
Area of parking surface		
Interior landscaped area		

**Structured Parking** primarily consists of garages or other structures that are designated for the parking of vehicles in basements, on rooftops, or within a building. Good use of vegetation around parking structures can soften the hardscape, obstruct unwanted light trespass unto surrounding properties, and reduce excessive noise. Structures should allow a minimum 8 ft. wide tract of land around the perimeter of the structure to be designated toward the use of trees, shrubs, and other non-invasive plant material. Parking structures should abide by the following minimum screening conditions around the perimeter of the structure:

- 1 shade tree/50 ft.
- 1 evergreen tree/40 ft.
- 1 shrub/10 ft.

## **Screens & Buffers**

Screens and buffers may be comprised of berms, plants, fences, or walls. Combinations thereof may be required to attain sufficient coverage. Screens and buffers should always be designed as both functional and aesthetic features of the broad landscape in which they exist.

### **Berms**

The graded slope of earth berms is not to exceed a vertical-horizontal ratio of 2:1 and shall be treated with appropriate ground cover or shrubs to minimize erosion and achieve sufficient screening. Any berms that consist of lawn shall not exceed a vertical-horizontal ratio of 3:1 to allow for accessibility in mowing. Berms should be a minimum of 3 feet in height.

### **Fences and Walls**

Fences and walls that are used for screening purposes should be a minimum of 3 feet in height. They shall be a maximum of 6' 5" in height for the side and rear yards of residential zones, and the front, side, and rear yards of non-residential zones. These fences and walls should include additional deciduous and/or evergreen shrubs for visual and environmental improvement. Walls and fences in the front yards of residential zones should be a maximum of 4 feet in height. Walls or fences between incompatible land use zones may achieve a maximum height of 12 feet if specific measures yield approval from the Division of Development Review.

**Screening** is an essential aspect of landscape design. Proper screening eliminates undesirable views, obstructs unwanted light trespass, and reduces noise among adjacent land use areas such as roadways, parking lots, or other properties. Evergreen trees used for the purpose of screening should be planted with a spacing not to exceed 15 feet on center. Screening should be avoided within sight triangles or wherever driveways, roads, utility easements, or other openings are required, in order to maintain safe vehicular and pedestrian flow.

### **Relevant Zoning Ordinance Requirements for Screens**

#### **▪ Parking**

Except as noted in section 59-E-2.92 of the Montgomery County Code, an off-street parking facility for 6 or more vehicles must be effectively screened on each side that adjoins or faces land in a residential zone or institutional property. The following are minimum requirements for vegetative screening affiliated with parking facilities:

- Use a compact evergreen hedge of at least 3 feet in height
- Incorporate a mix of other evergreen and deciduous shrubs and trees

In cases where parking facilities located adjacent to a street right-of-way occurs, use the following minimum requirements:



- 1 shade tree shall be planted for every 40 feet of lot frontage
  - Trees and shrubs shall be planted within a landscaping strip of at least 10 feet in width.
- **Loading Docks/Storage Areas/Dumpsters**  
Any outdoor loading docks, storage areas, or dumpsters in commercial or industrial zones must be screened. Plant material is preferred where possible. Walls and fences will not exceed 12 feet in height.
  - **Utility/Mechanical Equipment**  
All utility/mechanical equipment at ground level or on rooftops, including, but not limited to, utility boxes, heating units, and air-conditioning units, must be screened from view, particularly from abutting roadways, residences, and other surrounding properties. Any of these utilities that lie within or adjacent to residential zones must be securely screened. Screening must provide adequate coverage of such equipment, without exceeding 12 feet in height.

**Buffering** is similar to screening in that it delineates between specific land uses or property boundaries, but there are different aspects involved. A buffer may yield only partial or periodic obstruction from view of another property, roadway, parking lot, or land use. Native vegetation, landscaping, walls, fences, or berms are all viable sources for buffering.

### **Relevant Zoning Ordinance Requirements for Buffers**

Buffers shall be required wherever land use zones are adjacent to one another. The following guidelines mandate the minimum requirements for buffering among various land use zones:

- Single Family Housing Adjacent to Single Family Housing:
  - 1 shade tree/60 ft.
- Single Family Housing Adjacent to Multi-Family Housing:
  - 1 Shade Tree/50 ft.
  - 1 Evergreen Tree/40 ft.
- Single Family Housing Adjacent to Commercial or Industrial:

- 1 Shade Tree/40 ft.
  - 1 Evergreen Tree/20 ft.
- Single Family Housing Adjacent to Road
  - 1 Shade Tree/50 ft.
  - 1 Evergreen Tree/40 ft.
- Single Family Housing Adjacent to Parking
  - 1 Shade Tree/40 ft.
  - 1 Shrub/5 ft.
- Multi-Family Housing Adjacent to Commercial or Industrial:
  - 1 Shade Tree/40 ft.
  - 1 Evergreen Tree/20 ft.
- Multi-Family Housing Adjacent to Road
  - 1 Shade Tree/50 ft.
  - 1 Evergreen Tree/40 ft.
- Multi-Family Housing Adjacent to Parking
  - 1 Shade Tree/40 ft.
  - 1 Shrub/5 ft.
- Commercial or Industrial Adjacent to Road
  - 1 Shade Tree/50 ft.
  - 1 Evergreen Tree/40 ft.
- Commercial or Industrial Adjacent to Parking
  - 1 Shade Tree/40 ft.
  - 1 Shrub/5 ft.

### **Storm Water Management Facilities (SWM)**

It is recommended for storm water management planting buffers that a minimum of one tree and five shrubs be planted per 100 feet of the storm water management facility edge. A mix of deciduous and evergreen trees is strongly recommended for optimal environmental measures. Particularly in locations where dwelling units are adjacent to storm water management areas, such buffers significantly improve the safety measures, the general aesthetics, and livable conditions for residents.

## Site Design Considerations

**Pedestrian accessibility** is one of the most important aspects of site design and is frequently overlooked. Placement of accessible wheelchair ramps for Americans with Disabilities Act (ADA) compliance, logical circulation patterns, and appropriate width sidewalks and paths are all part of the review process. It is important to integrate plant materials into circulation design to direct users toward features on a site and to help establish useable spaces. The following must be taken into account when designing spaces and corridors that will involve pedestrian use:

- Crosswalks should be provided where necessary to allow pedestrians safe travel across busy parking lots and intersections. Signalized intersections should have crosswalks on at least three sides, with four being preferable.
- Make sure that plant materials do not impede pedestrian access and circulation, such as hedges growing into sidewalk space.
- Avoid sidewalk placement that forces pedestrians to cross loading docks and minimize or avoid crossings of major garage or lot access points, and pay special attention to pedestrian and vehicle visibility when crossings are necessary.
- When providing public green space make sure that pedestrians have a clear and direct access route.
- Integrate street trees and shrubs to direct pedestrian circulation
- No evergreen trees or shrubs shall be planted on the south side of pedestrian walkways due to ice accumulation potential

**Vehicular accessibility** must conform to rules for setbacks and should be coordinated with pedestrian circulation to provide a safe and compatible design. Plant materials can act as an

entrance or focal point for an intersection or they may signal a change of use. It is important when selecting and locating plantings not to create a safety hazard by blocking sight distances at driveways and intersections with materials that are too high or too dense. No plantings should obstruct vision within sight triangles.

**Public Utility Easements (PUEs)** are a minimum of 10 feet in width and can be expanded along rights-of-way to include additional utilities. Planting materials are typically not permitted within the PUE to ensure that utility companies have free and clear access to the utilities for installation and maintenance. Special exceptions may be made where PUE's abut some parking areas or dwelling units as long as approved conduits are used in protection of the utilities within the PUE.

If a landscape strip is required adjacent to a PUE, an additional 10 feet of space exclusive of the PUE is required to allow room for plantings. If buffers are required along a PUE in a location that prevents adequate space for plantings, other screening methods may need to be explored such as masonry walls, berms, or use of existing vegetation.

Plantings within public **Rights-Of-Way** are regulated by the DPWT and the State Highway Administration(SHA). Planting designs sometimes need to be modified to follow the requests of these agencies. Only certain species of trees are allowed as street trees, and care must be taken when planting trees underneath overhead power lines. The current list of shade trees and ornamental trees permitted by DPWT (MC Design Standards, Dept. of Transportation, August 1991) is available in the *Approved Technical Manual of Trees* through the Maryland-National Capital Park and Planning Commission.

Substitutions of other species may be considered by DPWT and M-NCPPC for approval upon request. Spacing of trees is typically 40-50 feet on center on standard public streets. Within a CBD or urban area tree spacing requirements indicate 30 feet spacing on center. This spacing may be 30-50 feet on center if a streetscape is approved by M-NCPPC and DPWT. Street trees within a public ROW and on private streets must adhere to the following minimum clearances:

- 5 feet from a water meter, gas box, or inlet
- 10 feet from a fire hydrant
- 15 feet from a street light

These specifications may be amended by DPWT for spacing within the public ROW to comply with the most current standards. Spacing within private roadways typically follow the same standards as DPWT, but may be adjusted by the M-NCPPC inspector.

**Stormwater Management Facilities** should be indicated on the landscape plans. It is strongly urged to design these with more natural appearing perimeters, as opposed to rigid rectilinear layouts. Vegetation should be placed around SWM areas to enhance their aesthetics. Large shade trees are not permitted on the slopes as their root systems may allow stormwater to breach the containment facility. SWM facilities and any associated planting is regulated in accordance with State and County standards and monitored by the DPS. The Commission reviews the overall site, which should integrate the SWM facilities and design of the site, including appropriate placement and buffering where necessary. It is recommended that the storm water management facility be part of a larger open space area at least twice the size of the storm water management area.

**Retaining Walls** may effectively be used in locations unsuitable to grading manipulation. Any wall that exceeds 30 inches in height requires a permit from DPS prior to construction. For reasons of structural strength and safety, retaining walls should not exceed 6 feet in height. The use of multiple walls in tiered, or terraced, form is the recommended treatment in lieu of a single, large retaining wall.

**Lighting** should be designed, located, installed, and directed so as to prevent any objectionable glare, disability glare, light trespass, or sky glow to occur anywhere on or off the designated property. Landscape lighting should be designed to conserve energy, minimize maintenance costs, and reduce light pollution while providing sufficient overall luminance. Consider the environmental, visual, and functional impacts of lights and fixtures during both daytime and nighttime hours. Lights should be shielded fixtures or full cut-off fixtures, particularly when installed in or near residential zones. Light poles are not permitted within PUEs. Lighting within public ROWs must follow standards for spacing, height, and wattage as regulated by DPWT. Lighting outside of the public ROW is reviewed, approved, and enforced by the Commission. Photometric lighting plans, showing the number of footcandles, lamp height and spacing, types of lamps and fixtures,

and amount of wattage must be submitted to Montgomery County Department of Planning for review.

## **Environmental Protection**

### **Environmental Guidelines**

The protection of environmentally sensitive areas, such as streams, floodplains, wetlands, steep slopes, and endangered species, is integral in limiting the profound impact development can have on our natural resources. The aforementioned, and all other necessary sensitive areas, must be clearly represented on the appropriate plans for submittal. Refer to the Montgomery County *Environmental Guidelines: Guidelines for Environmental Management of Development in Montgomery County* for specific planning and developmental requirements associated with these sensitive areas.

### **Forest Conservation**

It is essential that we maintain sufficient percentages of forested land so that healthy, natural environments continue to flourish in the expansive development patterns of Montgomery County. Therefore, priority should be given to retaining existing forest on any site intended for development.

The Montgomery County Planning Department requires that Natural Resources Inventory(NRI) and Forest Stand Delineation(FSD) information be submitted for review prior to any developmental site planning. Upon approval, a Forest Conservation Plan may be required to demonstrate all trees designated for retention, as well as any necessary afforestation/reforestation areas. The basic components of a forest conservation plan include the following:

- Forest Conservation Plan Drawings
- Forest Conservation Worksheet
- Planting Plan and Narrative

- Development Program
- Financial Security
- Management Agreement
- Long-term Protection
- Qualifications of Preparer(s)

Further information regarding forest conservation requirements can be found in *Trees: Approved Technical Manual*, available at M-NCPPC in Montgomery County.

### **Low Impact Development**

Many techniques have been developed in recent years to minimize the negative impact on the environment that can be associated with construction of new developments. Whenever possible these methods should be considered and implemented as a viable option in order to create more sustainable and livable communities.

### **Green Roof Technology**

Green roofs are engineered layers of gravel, special fabrics, soils, and heat and drought tolerant plants. Some of the benefits of the latest green roof technology available are reduced heating and cooling costs, reduced stormwater runoff, and tax credits. While initial costs may be marginally higher than traditional roofs, estimates indicate that over time the replacement costs will be lower due to longer life span.

### **Bioretention**

Wetland plants combined with engineered subsurface filter and channel systems can significantly improve the quality of stormwater runoff from impervious areas such as parking lots, and can provide aesthetically pleasing results. Bioretention typically addresses the quality of runoff on a site by methods such as grass swales and planted infiltration areas within parking lots.

# Planting Performance Standards

Providing optimal conditions for the health of trees and plant material is integral to sustaining their life, longevity and maintaining the overall appearance of a project. Key aspects such as sunlight, wind, moisture, soil depth, growing medium, environmental stresses and hardiness zones must be considered when selecting and installing plant material. To ensure the longevity of trees and plant material Best Management Practices (BMP) must be followed during the installation and ensuing maintenance phases of any project.

Specific products are encouraged to be considered for use in protecting and nurturing the condition of trees and plant material. Examples of such products are Structural Soil, Root Aeration Matting or any number of other products designed to protect and enhance the health of trees.

## **Reference Standard for Nursery Stock**

All proposed plantings shall conform to the current standards in the *American Standard for Nursery Stock*, published by the American Association of Nurserymen (AAN), latest edition, as developed by the United States Department of Agriculture. All deciduous trees should have a minimum 2.5"-3" caliper at time of planting. Evergreen trees are required to be at least 6 feet in height at time of planting. Shrubs shall be of 5 gallon size containerized or balled & burlapped. Groundcovers shall be of 1 gallon size at time of planting.

## **Reference Standard for Nomenclature**

All proposed vegetation must be clearly identified on landscape plans, in accordance with the standards for nomenclature, as demonstrated in *Hortus Third: A Concise Dictionary of Plants Cultivated in the United States and Canada*.

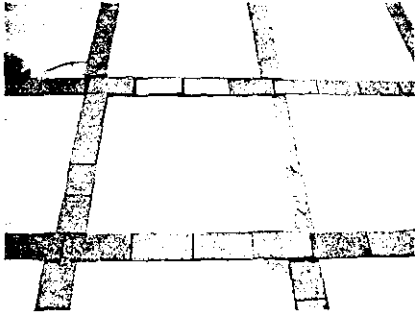


Landscape Plans shall provide applicable planting schedules to indicate specifications of all proposed plant materials for the site. Below is a basic example.

### Sample Planting Schedule

Key	Botanical Name/ Common Name	Size/ Height	Spacing	Quantity	Remarks
QA	<u>Shade Tree</u> <i>Quercus alba</i> / White Oak	8'-10' / 2.5" - 3" cal.	40'	6	Central leader, full crown, B&B
LI	<u>Ornamental Tree</u> <i>Lagerstronia indica</i> / Crape Myrtle	8'-10'	30'	2	Multi-trunked, B&B 3 stems min.
PL	<u>Shrubs</u> <i>Prunus laurocerasus</i> 'Skipkaensis' Skip Laurel	5 gal.	5' on center	10	Container or B&B
IS	<u>Ground Cover</u> <i>Iberis semperviridis</i>	1 gal.	18" on center	24	Container

# Enforcement



## **Enforcement of the Landscape Plan**

All elements provided on the approved site and landscape plans are to be installed and maintained for the life of the project. The approved plans are binding upon the original applicant, its successors and assigns, and on the land and improvements in perpetuity or until released in writing by the Planning Board. These elements include, but are not limited to, lighting, private street paving, curb and gutter installation, sidewalk installation, pathways, trails, recreational amenities and landscape plantings. The Commission has the authority to enforce these provisions both upon initial construction and after project completion. This authority is granted under both Montgomery County Code Chapter 50 and Article 28 of the Annotated Code of Maryland.

Site inspections occur at three milestone events in the course of project construction. The first is at the very beginning of the project where a coordination, or pre-construction, meeting is held. This pre-construction meeting is attended by at least an M-NCPPC inspector, a Montgomery County Dept. of Permitting Services (MCDPS) inspector, the site supervisor and the developer. In this meeting coordination issues are outlined, sequence of construction is discussed and the flagged limit of disturbance (LOD) is inspected. Following this meeting, once all issues have been resolved, the developer can then install Tree Protection Fencing (TPF) and Sediment/Erosion Control Measures. Once this is accomplished site clearing and grading can begin. The next milestone inspection occurs at the 70% completion stage. By the 70% point of the project certain approved site plan elements must be in place for the project to be granted permission to continue further. The final inspection occurs at the 100% stage in which all elements of the approved plans are

inspected for completion and workmanship before being turned over to the appropriate homeowner's association (HOA) or responsible party. Additional random periodic inspections may also occur at the discretion of the M-NCPPC inspection staff throughout the life of the project. In order to effectively coordinate inspections in a timely fashion a 3 day notice must be given to M-NCPPC inspection staff before scheduling inspections.

The applicant shall send written notice to M-NCPPC's Inspection Unit to initiate the scheduling of site inspections at the following milestones:

1. At pre-construction with M-NCPPC staff and MCDPS sediment control staff prior to any clearing or grading.
2. At 70% occupancy.
3. At 100% completion.

The applicant will complete the following site plan elements prior to occupancy of units constructed in that phase or section:

1. Paving of roads (excluding final topping).
2. Parking areas.
3. Sidewalks along frontage of lots to be constructed prior to occupancy of associated buildings.
4. Lighting (street and parking lot).
5. Grading.
6. Landscaping (adjacent to building(s)).
7. Foundation landscaping (single family dwellings).
8. Pathways (only when located between two residential units).
9. Fences or noise berms.

The applicant will complete the following site plan elements prior to 70% occupancy of approved units in that constructed phase or section:

1. Sidewalks (off-site).
2. Pedestrian pathways and bikeways.
3. Parking lot and perimeter landscaping.
4. Recreational facilities.

5. Landscaping.
6. Final topping of roads and parking lots in areas with completed residential units.

Street tree plantings must progress as street construction is completed, but no later than six (6) months after completion of the units adjacent to those streets.

The applicant must construct all recreational facilities and convey these facilities and related Common Areas within the timeframes contemplated in the Phasing Schedule. The applicant must also arrange for inspections by M-NCPPC staff to ensure that all facilities are timely, correctly and completely constructed. These arrangements must be made at least three days prior to the desired inspection date. All local and Community-Wide recreational facilities shall be designed and constructed in accordance with Parks Department standards and criteria as well as the most current edition of M-NCPPC's adopted Recreational Facilities Guidelines. The applicant shall warrant that all facilities have been constructed in a good and workmanlike manner and are fit for each of their intended purposes.

Unless the Planning Board has agreed to modify the Phasing Schedule, the applicant's failure to timely complete and turn over facilities and Common Areas shall operate to preclude the applicant from receiving any additional building permits for that particular phase and all remaining phases until such time as the default is cured.

The enforcement of the approved plans is carried out through fines, civil penalties and stop work orders. Fines and civil penalties can be assessed if sites are not in compliance with the requirements of the approved site and landscape plans. The fines for Site Plan violations can range in severity from a single \$250 citation up to a \$500 daily fine until the problem is corrected. If the situation is severe enough a site-wide stop work order may be issued.

Commission staff can approve minor changes to the landscape plan as long as the intent of the plan is maintained. Minor field changes would be typified by making slight changes to planting material or site features that do not have a significant impact to the site plan. Minor field changes or revisions shall be made in writing and approved by Commission staff prior to any action taken by the applicant or responsible party. Major changes are typified by

changes in building locations, roadway alignments, changes in the site plan layout or any change that alters the design intent of the approved plan. Major changes shall be resubmitted in writing through the Planning Board for approval.

### **M-NCPPC Development Program Inspection Schedule**

<b>M-NCPPC APPROVAL SIGNATURE</b>	<b>DATE</b>	<b>TASK PERFORMED</b>
		PRE-CONSTRUCTION MEASURES IN PLACE BEFORE CLEARING AND GRADING
		PRIVATE ROAD CONSTRUCTION
		INSTALLATION OF ORNAMENTAL LANDSCAPING
		POST CONSTRUCTION PROTECTION PRIOR TO PLANTING (REFORESTATION)
		AFTER REFORESTATION-START OF TWO YEAR MAINTENANCE PERIOD
		AFTER TWO YEAR MAINTENANCE PERIOD-MUST MEET MINIMUM SURVIVABILITY

### **Maintenance Responsibilities**

After installation of all materials on the landscape plan has passed final inspection, maintenance responsibilities within residential areas are typically transferred to the (HOA) or subsequent owners. The subsequent property owner, which may be an HOA, condo association, or private individual, is required to maintain the provisions of the approved site and landscape plans. The property owner must contact the Commission prior to making adjustments to elements of the plan, such as plant removal or relocation, street light modifications and modifications to recreational facilities. The responsibility of the plans and improvements associated with the plans transfers from the original applicant or owner to all subsequent property owners and is binding upon all successors and assigns.

# References

Prince George's County, Maryland Landscape Manual: October 1989  
Anne Arundel County, Maryland Landscape Manual: October 1996  
Town of Cary, North Carolina Community Appearance Manual: February 2003  
City of Lismore, Australia Landscape Guidelines: November 1996  
American Planning Association, Planning Advisory Service Report 431: Preparing a  
Landscape Ordinance by Wendelyn A. Martz with Marya Morris: December 1990  
Lyndhurst, New Jersey, New Jersey Meadowlands Commission, *Landscape and Open Space  
Guidelines*: November 1999  
Howard County, Maryland Landscape Manual: January 1993  
Town of Glenville, New York Landscape Manual: March 2004  
City of La Grande, Oregon Ordinance: March 2003

## **Links**

- 1) American Society of Landscape Architects:  
<http://www.asla.org/>
- 2) Landscape Contractors Association (MD, DC, VA):  
<http://www.lcamddcva.org/>
- 3) Associated Landscape Contractors of America:  
<http://www.alca.org/site/pp.asp?c=bjIQK9OZG&b=5321>
- 4) Montgomery County - Maryland National Capital Park and Planning Commission:  
<http://www.mc-mncppc.org/>
- 5) Montgomery County Department of Public Works and Transportation:  
<http://www.montgomerycountymd.gov/content/dpwt/>
- 6) Montgomery County Department of Permitting Services:  
<http://permittingservices.montgomerycountymd.gov/dpstmpl.asp?url=/Main.asp>

# Acknowledgements

## **Process**

In the summer of 2003 and 2004, staff of the Development Review Division of the Maryland-National Capital Park and Planning Commission-Montgomery County initiated plans to develop a usable landscape design guide to be distributed to design professionals and the development community to aid in preparing landscape plans. The manual was also created to serve as a reference for Commission staff when reviewing site plans, instead of searching through the zoning ordinance and various existing manuals for specific references to landscaping. The guidelines will serve as a single source to consult for questions relating to landscape design, placement, circulation and interior green space for parking.

## **Site Plan Review**

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MNCBIA - Maryland National Capital Building Industry Association

# Glossary

- 1) **Aesthetic** – A guiding principle in the matters of artistic beauty and good taste, especially as related to the field of landscape design.
- 2) **Afforestation** – The establishment of forest cover on areas which are not presently forested, or where existing forest cover is below the afforestation threshold for the use.
- 3) **Amended Soil** – Any soil comprised of additional material for the purpose of improving its physical properties, such as permeability, drainage, aeration, and structure, to provide a more suitable environment for roots.
- 4) **American Disabilities Act (ADA)** – Mandate of 1990 which prohibits discrimination on the basis of disability by public accommodations and requires places of public accommodation and commercial facilities to be designed, constructed, and altered in compliance with the accessibility standards established by this part.
- 5) **Bioretention** - The use of vegetation and soil amendments in retention areas designed to allow infiltration of surface runoff into the ground. The plants provide additional pollutant removal and filtering functions while infiltration allows the temperature of the runoff to be cooled.
- 6) **Bioretention Cell** – An individual bioretention facility for storm water management.
- 7) **Buffer** - The use of landscaping or retained native vegetation or the use of landscaping along with berms, walls or fences that at least partially and periodically obstruct the view from the street or an abutting property in such a manner that vehicular use areas, parking lots, parked cars, detention ponds and conflicting activity areas will be partially obstructed from view.
- 8) **Caliper** – The diameter of a tree, measured at a point 6 inches above the ground line if the resulting measurement is not greater than 4 inches. If the resulting measurement is more than 4 inches, the measurement should be made at a point on the trunk 12 inches above the ground line.
- 9) **CBD** – Central Business District. Central district of a city, usually characterized by a concentration of retail and commercial buildings.
- 10) **Critical Root Zone** – Typically, a circle on the ground that corresponds with the drip line, or width of foliage, of the tree. In cases of narrow or columnar growth, a circle on the ground that radiates outward from the trunk shall be established by associating 1 ½ ft. in length per one inch of total diameter of the tree.
- 11) **DPS** – Montgomery County Department of Permitting Services. Agency responsible for issuing permits to anyone who wants to develop land or build something on the land.



- 12) **DPWT** – Montgomery County Department of Public Works and Transportation. Provide project planning, engineering design, and construction management services for the County's public infrastructure. This includes roads, sidewalks, bikeways, and most public buildings.
- 13) **Green Area** - An area of land associated with and located on the same tract of land as a major building or group of buildings, or a prescribed portion of the land area encompassed by a development plan, diagrammatic plan or site plan, to which it provides light and air, or scenic, recreational or similar amenities.
- 14) **Groundcover** – A low spreading plant, usually 1-12" tall, that can help retain soil moisture, keep soil cool, suppress weeds, and stabilize slopes.
- 15) **Interior Green Space** – Those areas, typically islands, within the perimeter of a parking lot that consist of shade trees, shrubs, groundcover, or other vegetative material for the primary purposes of shading and infiltration of rainwater.
- 16) **Landscape Architect** – A licensed and registered professional practitioner of the analysis, planning, design, management, and stewardship of the natural and built environments.
- 17) **Light Trespass** – Light that falls in unintended or unwanted locations, typically across property boundaries.
- 18) **Limit of Disturbance (LOD)** – Line designating the separation between the areas that will be disturbed and those areas that are not to be disturbed.
- 19) **Low Impact Development (LID)** – Comprehensive land planning and engineering design approach geared to protect, maintain, and enhance the hydrologic regime of urban and developing watersheds. Strategic planning combined with micro-management techniques achieve improved environmental protection, while allowing for development or infrastructure rehabilitation to occur.
- 20) **M-NCPPC** – Montgomery-National Capital Park and Planning Commission. A Maryland Agency, established in 1927 by the Maryland General Assembly, to develop and operate public park systems and provide land use planning for the physical development of the great majority of Montgomery and Prince George's Counties.
- 21) **Open Space** – a portion of a site which is permanently set aside for public or private use and shall not be developed. The space may be used for passive or active recreation, or may be reserved to protect or buffer natural areas.
- 22) **Ornamental Tree** – usually a small or mid-sized tree that is intended to serve as a decorative or architectural feature in the landscape.
- 23) **Private** – Those tracts of land that are owned and operated by individual entities not affiliated with any public or governmental agency.

- 24) **Public Land**– Any land that is owned or controlled by a public or governmental agency.
- 25) **Public Use Space** – Space required by the master plan or sector plan and other space devoted to such uses as space for public recreation made up of such elements as, but not limited to, green areas, artwork, gardens, plazas, pathways, lawns, and fountains.
- 26) **Public Utility Easement (PUE)** – Area of land designated for utility maintenance accessibility that is incorporated within a public right-of-way or parallel to a public right-of-way.
- 27) **Qualified Professional** – A licensed Landscape Architect registered in the state of Maryland, or other licensed and registered professionals authorized by the state of Maryland to prepare and seal landscape plans.
- 28) **Reforestation** – The creation of a biological community dominated by trees and other woody vegetation containing at least 100 trees per acre with at least 50 of those trees having the potential of attaining a 2” or greater diameter.
- 29) **Right of Way (ROW)** - Strip of public land designated for the purpose of roadway, railway, or utility use.
- 30) **Screen** – The use of plants, walls, berms, fences, or additional landscaping to segregate specific areas, establish privacy, or entirely obstruct undesired viewsheds.
- 31) **Shade Tree** – A large canopy tree after maturity that is intended to block a considerable amount of sunlight to protect and cool surfaces, form a ceiling layer, or shelter people.
- 32) **Sight Triangle** – An area of triangular proportion at the intersection of two public rights-of-way or a public right-of-way and a private driveway, in which no obstruction of clear vision may be located.
- 33) **Shrub** – A woody perennial plant that differs from a perennial herb in its persistent and woody stem(s), and less defined from a tree in its lower stature and/or the general absence of a well-defined main stem.
- 34) **Storm Water Management (SWM)** - The management of water runoff to provide controlled release rates to receiving systems, typically through the use of detention/retention/bioretenention facilities.
- 35) **Structural Soil** - an engineered soil matrix that satisfies load bearing for paving, while allowing for water, oxygen, and nutrients to get to the roots.
- 36) **Structured Parking** – All garage or other structured space allocated for the parking of vehicles in basements, on the roofs of buildings, or otherwise within buildings.

